NEW Water
The brand of the Green Bay Metropolitan Sewerage District

August 5, 2020

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VIA EMAIL: gross.louise@epa.gov

RE: Response to June 11, 2020 information request

Dear Ms. Gross:

The purpose of this letter is to submit the information that you requested from Green Bay Metropolitan Sewerage District (GBMSD) via email on June 13, 2020 and during a conference call on July 16, 2020. The responses to your follow up questions are below and supplemental documentation is attached.

1. **Why does the 12-hour block average pressure drop steadily decrease from April 2019 to July 2019? It seems that the pressure drop should slowly increase with time as a result of dust and precipitate buildup in the GAC. A slow increase in pressure drop was expected by New Water as described in its AMP petition.**

Response:
We don't have an explanation for the decrease in pressure drop that occurred from April 2019 to July 2019. No operational changes were made that would have caused the pressure drop to decrease. This parameter is monitored continuously, but the decrease was not noted as a concern. An increase in pressure differential would have been a concern.

2. **What happened with the GAC unit in mid-August through Mid-September of 2019? The pressure drop across the GAC unit increased sharply from late August 2019 to around September 24, 2019, then fell significantly for about two weeks before a very significant increase occurred over a very short period of time. See attached graph.**

Response:
When the change in the rate of increase in pressure differential was noted at the end of August, we contacted the GAC supplier for assistance. The increase in pressure differential indicated a possible buildup of material within the carbon media, and with the assistance of the GAC supplier, we planned to evaluate and correct the issue during the annual maintenance shutdown, which was scheduled for October 2019. Between August and October, the pressure differential was monitored closely to ensure that the compliance limit was not exceeded and we were in regular contact with the GAC supplier on this topic during this time period.

We don't have an explanation for the decrease in pressure drop that occurred for the two weeks after September 24 before the increase. No operational changes were made that would have caused the pressure drop to decrease.

3. **In reference to the available sulfur tables (06 GAC Total Sulfur.xls), the 12/7/2018 calculations indicate that the available sulfur content value was calculated using the equation footnoted in red as to apply when sulfate is reported as SO4. The available sulfur content calculation provided in file "02 GAC Carbon Sample Results 12-07-2018" indicates the other available sulfur content equation (footnoted in blue in file 06 GAC Total Sulfur.xls) was used. The available sulfur values between the two files are different. Please explain.**

Response:
The analytical results for 12/7/2018 were supplied by the vendor of the incinerator system, Suez, who was responsible for the initial analytical testing of the carbon. Suez applied the formula to calculate the available sulfur of the carbon and shared their summary spreadsheet with NEW Water. That summary spreadsheet was provided to EPA in a previous submittal and is attached as File 01 GAC Carbon Sample Results-12-07-2018.

EPA noted that the available sulfur calculated in that file was inconsistent with NEW Water's calculated available sulfur values in File "02 GAC Total Sulfer.xls". We asked the GAC system supplier, CPPE, to review the data and calculations in the context of EPA's question, and they found the errors in NEW Water's calculations.

The difference that CPPE found was the result for the center bed (identified as "2nd layer" in the Suez document). West bed ("1st layer") and East bed ("3rd layer") were correct and results are the same in both files.

The discrepancy is not coming from the formula used, but there was a typo in the excel file: a zero was missing in the column "sulfate content"; 3.35 wt% = 33.500 mg/kg and 5.61 wt% = 56.100 mg/kg. CPPE corrected the error and provided an updated spreadsheet, which is attached as File 02 GAC Total Sulfur - Free sulfur recalculated 07 16 2020.xls.

CPPE explained that the two formulas are correct, they are just different versions of the same calculation. The formulas calculate the same results, they just use different inputs. The formulas can be summarized as: Amount of available Sulfur = Total amount of Sulfur – Amount of Sulfur contained in Sulfates – Amount of Sulfur bonded with Mercury. The red or blue formula can be used, but an extra step may be needed, depending on the raw data that's available. SUEZ did that; they converted their wt% of sulfates into wt% of sulfur contained in sulfates to get their results (factor 32/96, based on molar mass).

4. **Why does the total sulfur content significantly increase for the last two samples (3/18/19 and 5/5/19)?**

Response:
We don't have an explanation for the increase in total sulfur in March 2019 and May 2019. It appears that sulfur may have been getting into the carbon media during those months.

5. **When is the next GAC sulfur sampling date? Was there another baseline sample taken at the time the new carbon was added to the GAC unit?**

Response:
The GAC was filled with new carbon before the GAC went online in February 2020 after an extended shutdown. A sample of the new carbon was analyzed to establish a baseline. Sampling has been done four times since the GAC was placed back into service. Lab reports are attached for the first three sampling events as Files 03, 04, and 05. The spreadsheet that summarizes available sulfur is File 06. Results are not yet available for the fourth set of samples taken on August 3, 2020, to assess the carbon again.

6. What is the minimum operating limit for scrubber water pH?

Response:
The operating limit for scrubber water pH is established during compliance emissions testing. We previously provided monitoring data for April 2019 through October 2019, the six months of incineration that preceded the thermal excursion in the GAC.

The minimum limit for pH through June 30, 2019 was 5.9.
The minimum limit for pH beginning July 1, 2019 was 5.5.

7. What is the minimum scrubber water flow rate operating limit?

Response:
The operating limit for scrubber water flow rate is established during compliance emissions testing. We previously provided monitoring data for April 2019 through October 2019, the six months of incineration that preceded the thermal excursion in the GAC.

The minimum limit for scrubber water flow rate through June 30, 2019 was 317 gallons per minute.
The minimum limit for scrubber water flow rate beginning July 1, 2019 was 489 gallons per minute.

The limit for minimum scrubber flow rate increased when operating limits were calculated after annual compliance emissions testing in May 2019. The new limits took effect July 1, 2019. While reviewing the data recently, it became evident that the initial limit for scrubber flow rate (317 gpm) was calculated erroneously. This error has been reported to Wisconsin Department of Natural Resources in the attached report (File 07) entitled Correction to Green Bay Metropolitan Sewerage District Deviation Reports, (40 CFR 60, Subpart LLLL) July 1-December 31, 2018 and January 1–June 30, 2019, dated August 3, 2020.

8. What is the "SCADA monitoring system" mentioned in New Water's response to EPA question 3? Is it monitoring temperature in a location near the temperature elements TE/TIT-0517, TE/TIT-0666, or TIT-0606?

Response:
The SCADA plant monitoring system is the plant computer control system. All three elements measure exhaust gas temperature. They're located near their respective monitoring points and have local readouts. Temperature signals are sent from the elements to the SCADA system.

9. Where is temperature monitor TIT-0606 located and what is its purpose?

Response:
TIT-0606 is a temperature transmitter that measures temperature at the inlet to the ID fan. It's located in the exhaust gas duct between the WESP outlet and the ID fan inlet. The inlet (TIT-0606) and the discharge (TIT-0608) are used to monitor the exhaust gas temperature before and after the ID fan.

10. Temperature monitor TIT-0517 and TIT-0666 were initially calibrated by the manufacturer on 1/5/2016. Is there documentation that the temperature monitor TIT-0606 was initially calibrated by the manufacturer?

Response:
The initial factory calibration of TIT-0606 was conducted on January 5, 2016. The calibration report is attached as File 08.

11. **Does pressure monitor PDIT-0700 have two sensors, one at the inlet to the GAC and one at the outlet to the GAC, and it is referred to by a single name – PDIT-0700 as opposed to separate names for each sensor?**

Response:
PDIT-0700 is a single sensor with pressure sensing lines that are run from the inlet and the outlet. The unit measures the difference between the inlet and outlet pressures and the signal is sent to the SCADA system.

12. **Pressure monitor/transmitter PDIT-0700 was initially calibrated by the manufacturer on 10/4/15. Is it correct that the next time this unit was calibrated was January 2020"? Does New Water have documentation on the most recent calibration of this unit?**

Response:
PDIT-0700 was calibrated in early January when the monitoring systems and safety interlocks were verified prior to putting the GAC back into service on February 13. There is no formal documentation of the calibration.

13. **The temperature and pressure sensors/transmitters were to be calibrated every 12 months in accordance with the manufacturer's recommendation and the approved AMP. New Water states that the TIT instruments (transmitters) were not calibrated for 2018 or 2019. Has New Water calibrated the temperature and pressure sensors and transmitters to date in 2020?**

Response:
At least once per year, the temperature sensors and transmitters have been checked to verify that they're operating appropriately, but formal calibrations were not conducted at first. Calibrations of temperature transmitters TIT-0517 and TIT-0666 require the incinerator to be offline. The annual calibrations for 2020 were originally scheduled to take place during the upcoming maintenance shutdown in September-October, but we had an opportunity to conduct them earlier, on August 3, 2020. The calibration results are attached in File 09.

Please feel free to contact me by email (tsigmund@newwater.us) or phone (920-438-1095) with any questions or concerns you may have.

Sincerely,

GREEN BAY METROPOLITAN
SEWERAGE DISTRICT

Thomas W. Sigmund, P.E.
Executive Director

Appendices

1) Files 01: Laboratory reports from carbon analysis, 12/7/18
2) File 02: Remaining available sulfur of carbon (2018-2019)
3) Files 03-05: Laboratory reports from carbon analysis (February, March, April, June 2020)
4) File 06: Remaining available sulfur of carbon (2020)
5) File 07: GBMSD Subpart LLLL Correction to deviation reports dated 01/31/2019 and 08/01/2019
6) File 08: Initial calibration record for TIT-0606
7) File 09: Calibration record for TIT-0517 and TIT-0666, 08/03/2020

cc via email:

Mr. Dan Schaufelberger, US EPA
Mr. James Bonar Bridges, Wisconsin DNR
Ms. Tania Taff, Wisconsin DNR